

## APPENDIX I

# GLOSSARY

**AC**—Alternating current.

**AFCS**—Automatic flight control system.

**ALTERNATING CURRENT (AC)**—An electrical current that constantly changes amplitude and changes polarity at regular intervals.

**AMPLITUDE**—The maximum instantaneous value of an alternating voltage or current, measured in either the positive or negative direction.

**APU**—Auxiliary power unit.

**ARMATURE**—The windings in which the output voltage is generated in a generator or in which input current creates a magnetic field that interacts with the main field in a motor.

**AUTOTRANSFORMER**—A transformer in which the primary and secondary are connected together in one winding. Used to step up or step down voltages.

**AUXILIARY POWER UNIT (APU)**—An aircraft mounted gas turbine power plant with an attached generator, capable of providing electricity, engine starting air, and air conditioning for the aircraft. Requires only the aircraft battery and fuel for starting.

**BATTERY**—A device for converting chemical energy into electrical energy.

**BRUSH**—The conducting material, usually a block of carbon, bearing against a commutator or slip ring assembly that allows current to flow in or out of a component.

**BUS**—Systems of like priority on a common line.

**BUS BAR**—A primary power distribution point connected to the main power source.

**CAPACITOR**—Two electrodes or sets of electrodes in the form of plates, separated from each other by insulating material called the dielectric, capable of storing electrical energy in an electrostatic field.

**COMMUTATOR**—(1) The copper segment on the armature of a motor or generator. It is cylindrical in shape and is used to pass power into or from the brushes. (2) A mechanical device that reverses

armature connections in motors and generators at the proper instant so that current continues to flow in only one direction. In effect, the commutator changes ac to dc.

**CONSTANT SPEED DRIVE (CSD)**—A mechanical unit mounted to aircraft engines which converts variable engine speed to a constant output speed. Generators are mounted to constant speed drives in order to maintain the proper generator output frequency.

**CSD**—Constant speed drive.

**CURRENT**—The movement of electrons past a reference point. The passage of electrons through a conductor. Measured in amperes.

**DC**—Direct current.

**DIODE**—A material of either germanium or silicon that is manufactured to allow current to flow in only one direction. Diodes are used as rectifiers and detectors.

**DIRECT CURRENT (DC)**—An electrical current that flows in one direction only.

**EXCITER**—Auxiliary dc generator.

**FIELD WINDING**—The coil used to provide the magnetizing force in motors and generators.

**FREQUENCY**—The number of complete cycles per second existing in any form of wave motion, such as the number of cycles per second of an alternating current.

**GENERATOR**—A machine that converts mechanical energy into electrical energy.

**GPU**—Ground power monitor.

**GROUND**—A metallic connection with the earth to establish ground potential. A common return to a point of zero potential.

**GTCP-95 UNIT**—Gas turbine power plant unit, an APU.

**HERTZ (HZ)**—A unit of frequency equal to one cycle per second.

**HZ**—Hertz.

**INVERTER**—A mechanical device that converts a dc input to an ac output. Usually converts 26 volts dc to 115 volts ac for an emergency source of ac power for safety of flight systems and instrumentation.

**MAGNETIC FLUX**—The total number of lines of force issuing from a pole of a magnet.

**MIM**—Maintenance instruction manual.

**NICAD BATTERY**—Nickel-cadmium battery.

**PERMANENT MAGNET GENERATOR**—Furnishes control voltage and power for the voltage regulator.

**PHASE**—The angular relationship between two alternating currents or voltages when the voltage or current is plotted as a function of time. When the two currents or voltages are in phase, the angular difference is zero, and both reach their peak simultaneously. When the two currents or voltages are out of phase, one will lead or lag the other, and reach their peaks at different times. These differences in may differ in polarity as well as magnitude.

**PMG**—Permanent magnet generator.

**POWER**—The rate of doing work or the rate of expending energy. The unit of electrical power is the watt.

**PRIME MOVER**—A device such as aircraft engines, gearboxes, or constant speed drives that provide the driving force for a generator.

**RECTIFIER**—A device used to convert ac to pulsating dc.

**RF**—Radio frequency.

**ROTOR**—(1) The revolving part of a rotating electrical machine. The rotor may be either the field or the armature, depending on the design of the machine. (2) The rotating member of a synchro that consists of one or more coils of wire wound on a laminated core. Depending on the type of synchro, the rotor functions similarly to the primary or secondary winding of a transformer.

**RPM**—Revolutions per minute.

**SALIENT POLE**—A pole consisting of a separate radial projection having its own iron pole piece and its own field coil, used in the field system of a generator or motor.

**SHUNT**—A resistive device placed in parallel with another component. Appreciable current may flow through it and an appreciable voltage may exist across it.

**SLAB**—Sealed lead-acid battery.

**SLIP RINGS**—(1) Contacts that are mounted on the shaft of a motor or generator to which the rotor windings are connected and against which the brushes ride. (2) Devices for making electrical connections between stationary and rotating contacts.

**SOLENOID**—An electromagnetic coil that contains a movable plunger.

**SOLID-STATE DEVICE**—An electronic device that operates by the movement of electrons within a solid piece of semiconductor material.

**STATOR**—(1) The stationary part of a rotating electrical machine. The stator may be either the field or the armature, depending on the design of the machine. (2) The stationary member of a synchro that consists of a cylindrical structure of slotted laminations on which three Y-connected coils are wound with their axes 120 degrees apart.

**SYNCHRO**—A small motor-like analog device that operates like a variable transformer and is used primarily for the rapid and accurate transmission of data among equipments and stations.

**TACHOMETER**—(1) A small ac or dc generator, sometimes referred to as a rate generator, that converts its shaft speed into an electrical output. The tachometer is frequently used in servo systems to sense the velocity of a load. (2) An instrument that measures the rate at which a shaft is turning.

**TORQUE**—The turning effort or twist that a shaft sustains when transmitting power. A force tending to cause rotational motion; the product of the force applied times the distance from the force to the axis of rotation.

**TR**—Transformer-rectifier.

**TRANSFORMER**—A device composed of two or more coils, linked by magnetic lines of force, used to transfer energy from one circuit to another.

**VLAB**—Vented lead-acid battery.

**VOLT**—The unit of electromotive force or electrical pressure. One volt is the pressure required to send 1 ampere of current through a resistance of 1 ohm.

**WYE (Y)**—A three phase connection in which one end of each phase winding is connected to a common ground.

**ZENER DIODE**—A PN-junction diode designed to operate in the reverse-bias breakdown region.

## APPENDIX II

### REFERENCE LIST

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